SAFETY DATA UPDATE

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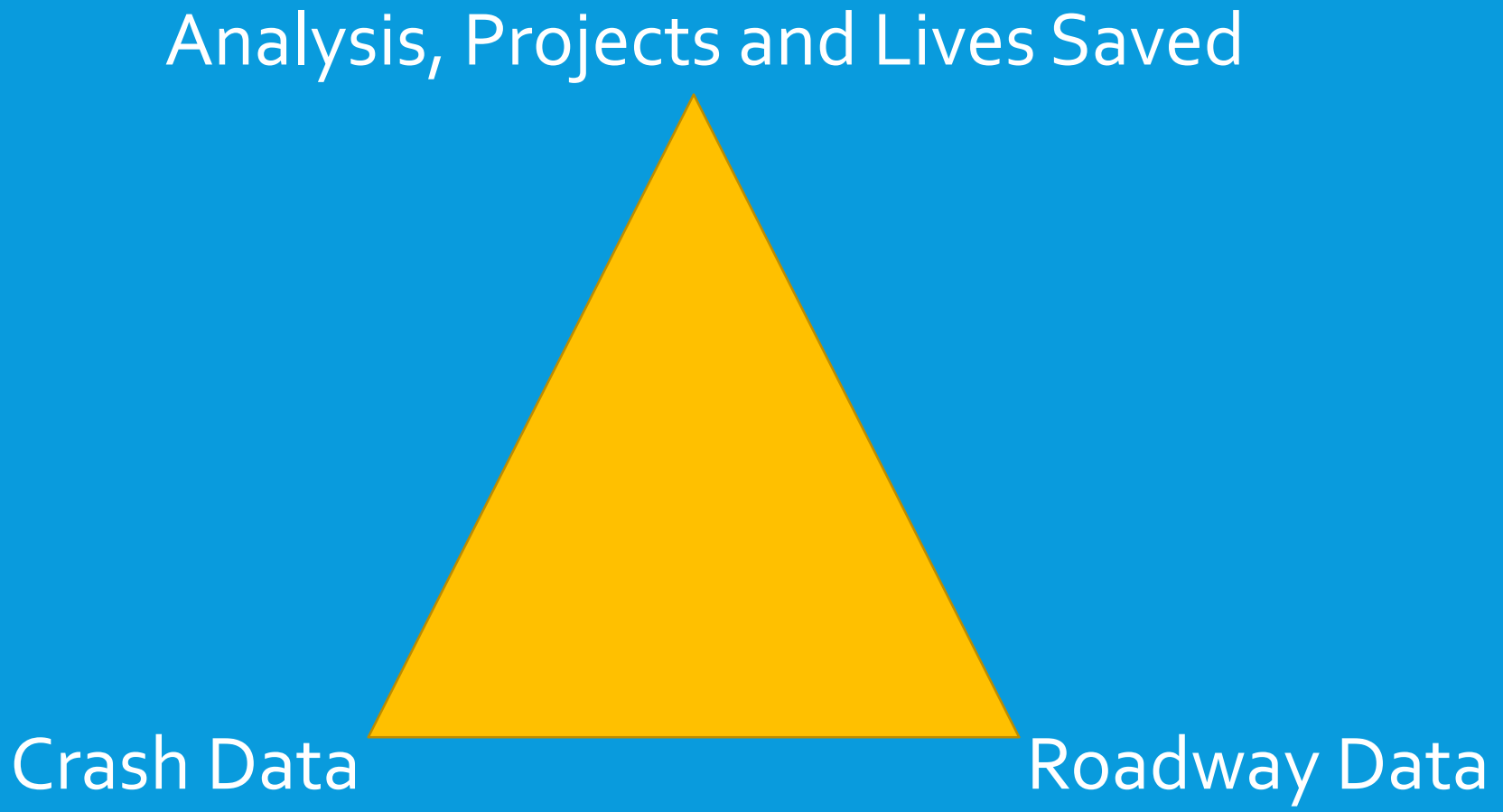
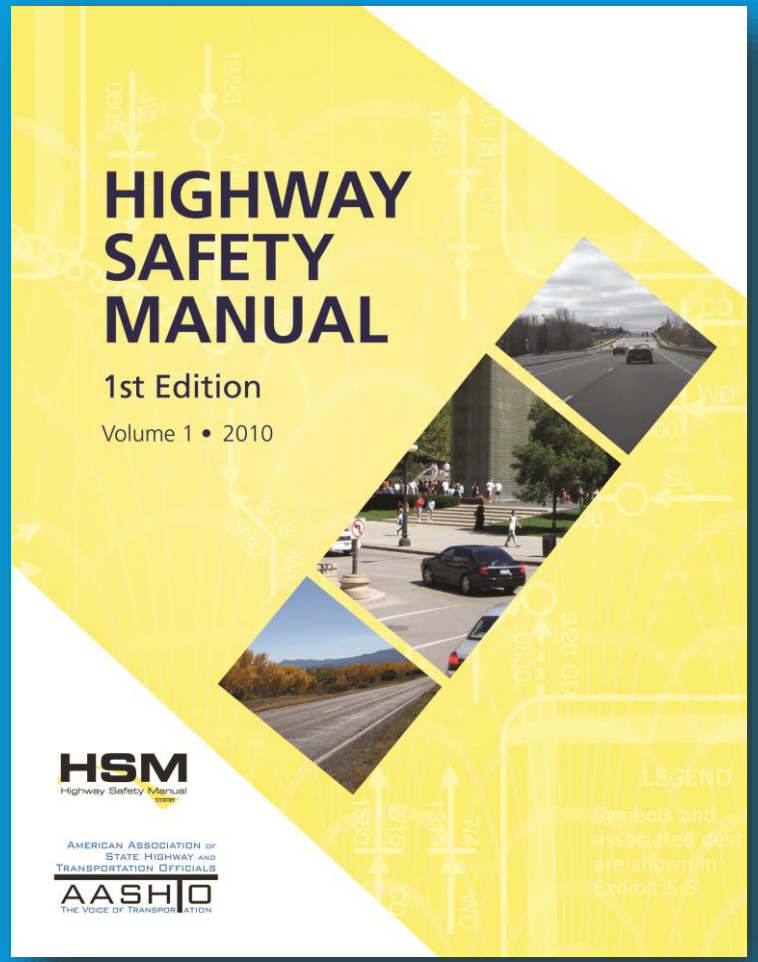
Florida DOT – State Safety Office

August 30th, 2016

SAFETY DATA STRUCTURE



HIGHWAY SAFETY MANUAL OVERVIEW



HIGHWAY SAFETY MANUAL OVERVIEW

An AASHTO Publication that…

- Provides information and tools to conduct quantitative safety analyses.
- Facilitates explicit consideration of safety throughout the project development process.

HIGHWAY SAFETY MANUAL OVERVIEW

- Methods for developing an effective roadway safety management program and evaluating its benefits.
- Predictive methods to estimate crash frequency and severity to support project level decision making.
- Catalog of crash modification factors for estimating the effect of a variety of geometric and operational treatments.

HIGHWAY SAFETY MANUAL DATA NEEDS

- More Data
- Different Data
- Used to determine
  - Current performance
  - Improvement potential
  - Future performance
- Working with CO Staff to identify needs
- Willing to partner ($$) to get it done

CURVE DATA PROJECTS

CURVE DATA NEED

- Lane Departure Crashes
  - 5,960 Fatalities (45%) + 34,292 Serious Injuries
  - FHWA Focus State
- State + Local Data
- MUTCD Curve Signing Compliance

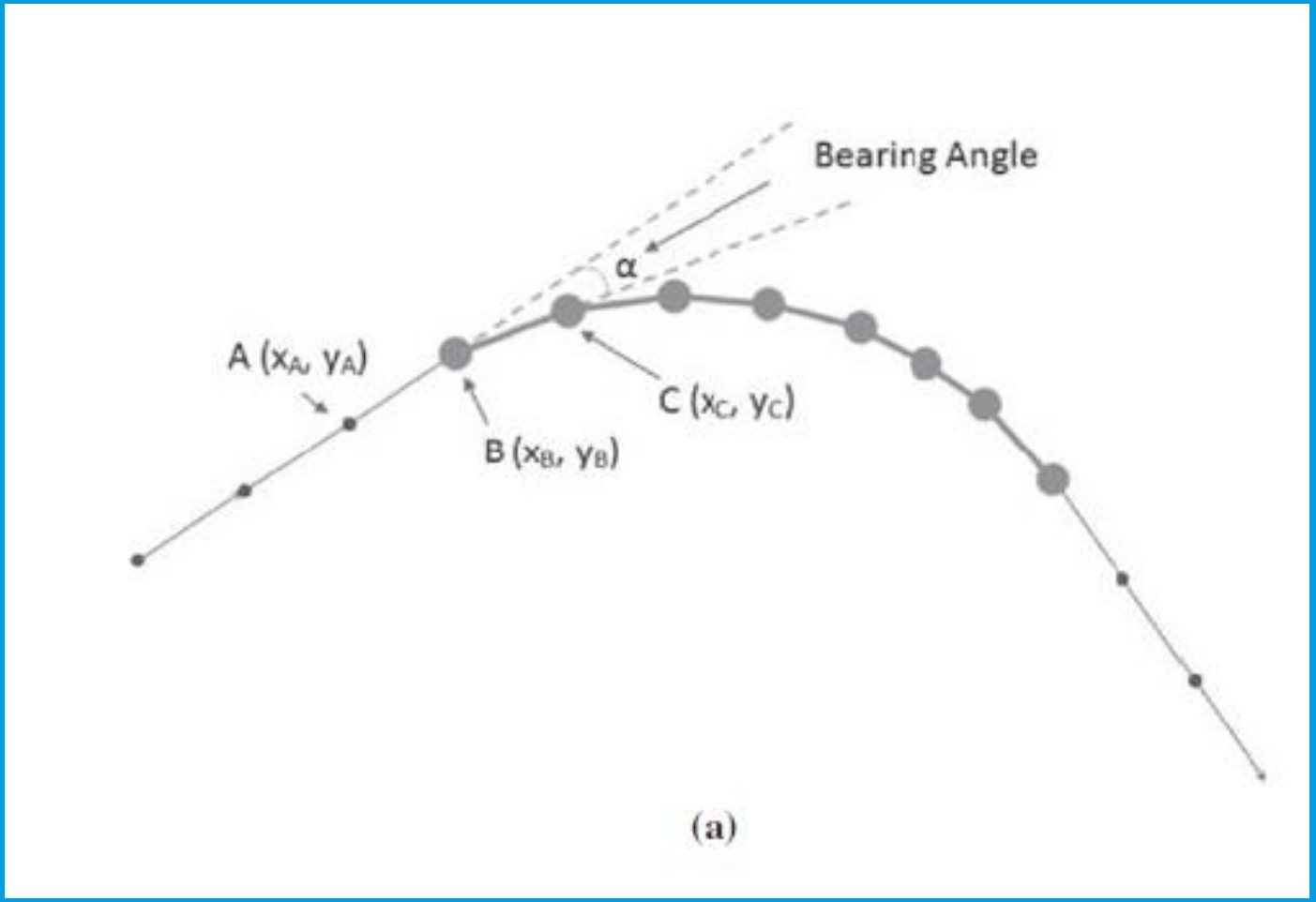
CURRENT STATE (FEATURE 221)

- Curve data from surveys or as-builts
- Free text field
  - 069D07'41.00”
- Unanchored features
- Evaluated TSO Curve Extension

SOLUTION

- Curve Data Collection
  - GIS Based
    - All State + Local Roads
  - Field / GPS Based
    - Select curve locations

CURVE DETECTION



Credit: Li, Chitturi, Bill and Noyce (2012) – Univ. of Wisconsin

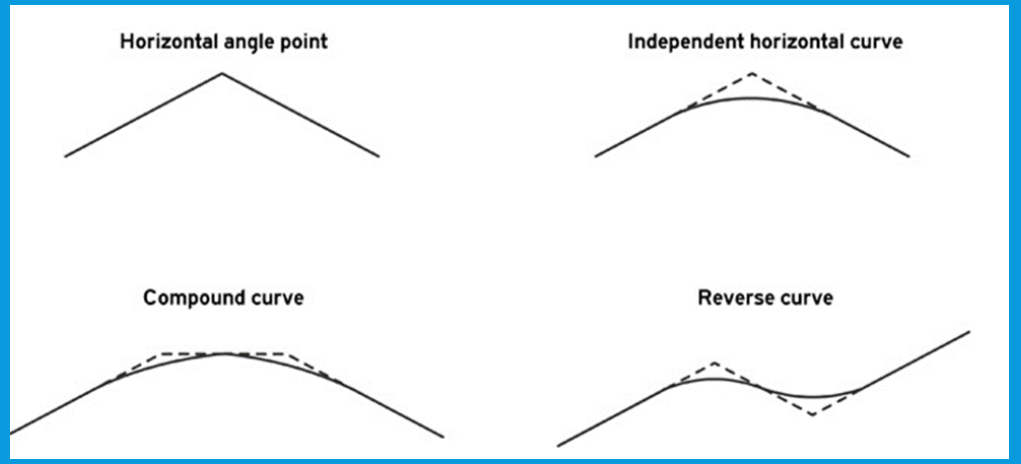
GIS BASED CURVE INVENTORY

- **Purpose:** Create an inventory of roadway horizontal curve data from Florida's All Roads Basemap (HERE) – Version 2015, Quarter 1.
- **Required Curve Attributes** (as defined by MIRE)
  - Identifiers and Linkage Elements
  - Type
  - Radius
  - Length
  - Transition Type
  - Intersection Angle and Direction
- **Deliverables:** Curve information in GIS format + required attributes
- **End Date:** July 2017

Credit: Dr. Ilir Bejleiri, UF Geoplan Center

CURVE INVENTORY ATTRIBUTES

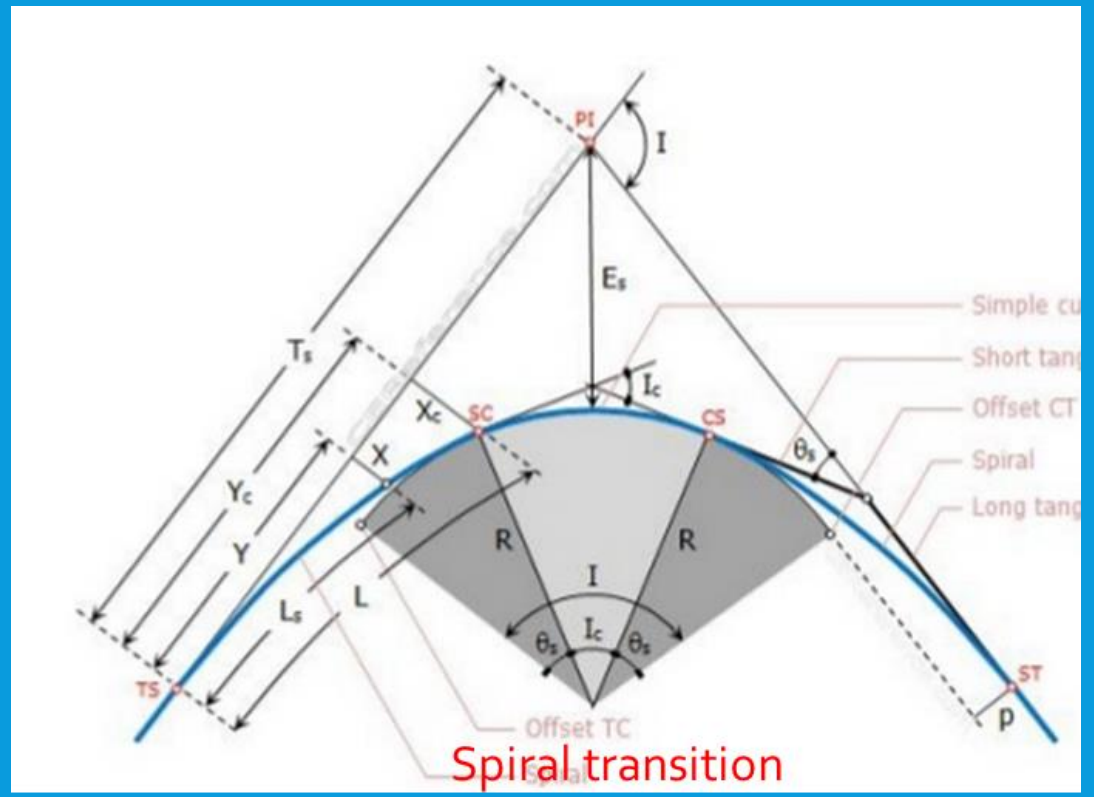
- **Identifiers and Linkage Elements**
  - RCI Route and LRS Coordinates
  - All Roads Basemap Route and Coordinates
  - **Type**
    - Horizontal angle point (i.e., joining of two tangents without a horizontal curve);
    - Independent horizontal curve;
    - Component of compound curve (i.e., one curve in compound curve);
    - Component of reverse curve (i.e., one curve in a reverse curve).



Credit: Dr. Ilir Bejleiri, UF Geoplan Center

CURVE INVENTORY ATTRIBUTES

- Radius
- Length
- Transition Type
  - Presence and type of transition from tangent to curve and curve to tangent
  - No transition/ Spiral transition/ Other transition
- Intersection Angle and Direction
  - The angle between the two intersecting tangents in the direction of inventory (sometimes called the "deflection angle")
- Direction of curve in direction of inventory:
  - Right/left



Credit: Dr. Ilir Bejleiri, UF Geoplan Center

MUTCD CURVE SIGNING STUDY

- Field / GPS Based Inventory
  - Locations selected based on highest crash risk
- Electronic Ball Bank Indicator
  - GPS
- Sign Inventory

a. Equipment Setup.

b. Measurement Devices.

MUTCD CURVE COMPLIANCE DATA ATTRIBUTES

- Curve direction
- Travel direction
- Latitude / Longitude
- Average test speed
- Curve radius
- Curve length
- Deflection angle
- Elevation at apex
- Side friction angle
- Side friction limit
- Superelevation
- Unique curve identification #
- FDOT geographic district
- FDOT RCI roadway ID, curve begin point and end point

INTERSECTIONS

INTERSECTION DATA NEED

- Intersection Crashes
  - 3,018 Fatalities + 34,112 Serious Injuries
  - FHWA Focus State for Intersection + Ped / Bike
- State + Local Data
- Consistent Foundation

INTERSECTION INVENTORY

- Need
  - Comprehensive inventory of intersections
  - Features tied to intersection inventory
- Data
  - NavTeq / HERE Data (GIS Data)

INTERSECTION INVENTORY ATTRIBUTES

- Unique Identifier
- Intersection Type
  - Road to Road
  - Road to Ramp
  - Road to Rail
  - Road to Ped / Bike Crossing
- Complexity
  - Simple
  - Complex
  - Median Cut
  - Roundabout
- Number of Legs
- Geometry
  - T – Intersection
  - Y – Intersection
  - Cross (4 leg)
  - Five or more
  - Roundabout
  - Other circular
  - Non-conventional
  - Mid-Block Pedestrian

INTERSECTION INVENTORY ATTRIBUTES

- Traffic Control
  - No Control
  - Two way stop (minor leg)
  - All way stop
  - Yield
  - Signalized
  - RR X-ing
- Approach AADT
- Turn Lanes
  - Channelization
  - Count by Type

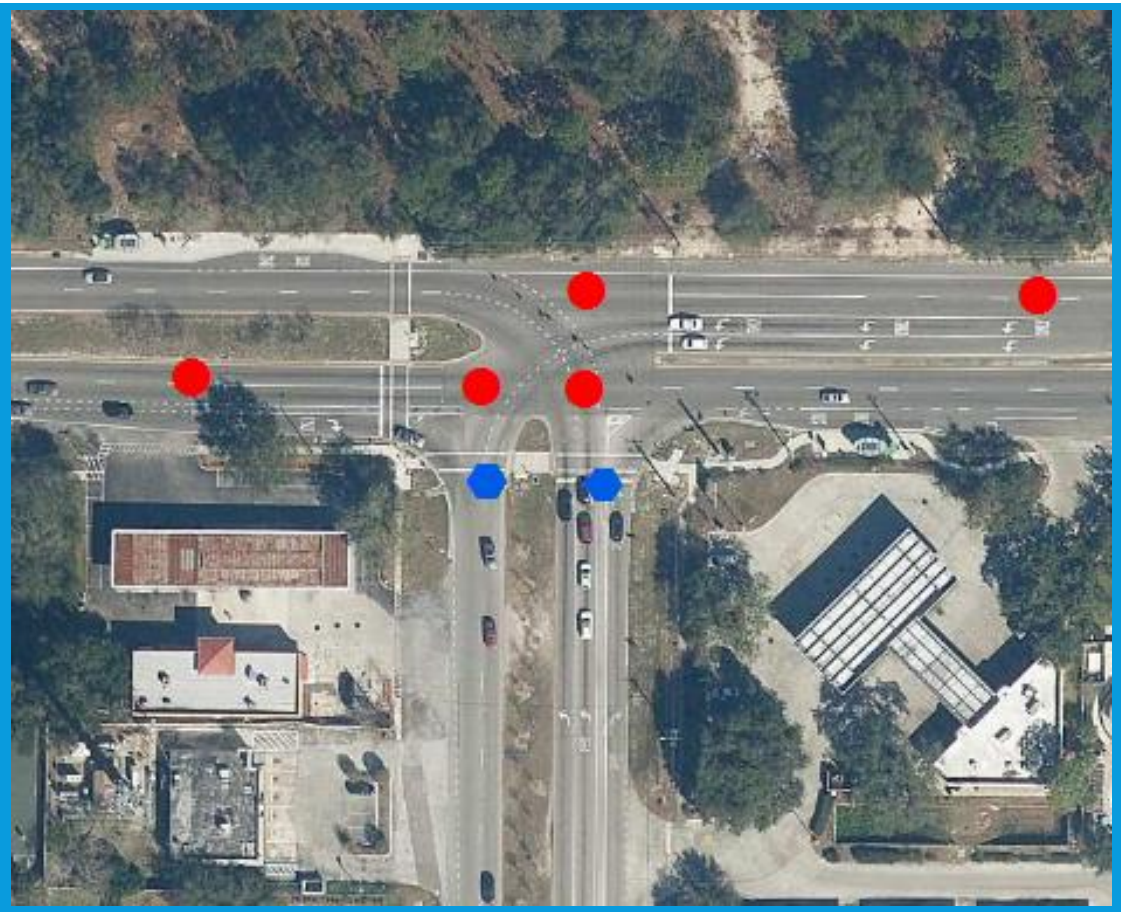
SIGNALIZED INTERSECTION INVENTORY

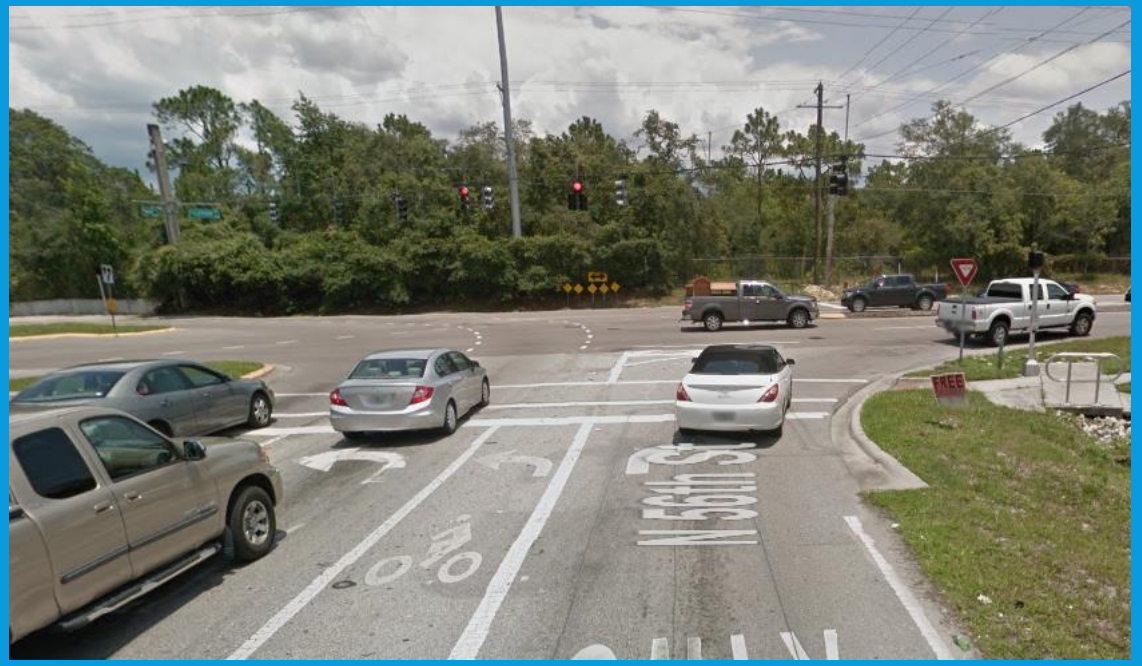
- Need
  - System-wide signalized intersection inventory
- Theory / Approach
  - Where multiple independent sources agree, higher confidence exists
- Data Sources (in order of confidence)
  - RCI Feature 322
  - NavTeq / HERE
  - Open Street Map
  - Crash Data
- Procedure
  - Confidence Rating
    - Sample High Confidence
    - Individual Review of Low Confidence

BUSCH BLVD @ N 22ND ST

RCI Feat. 322
NavTeq / HERE
Open Street Map
Crash Data

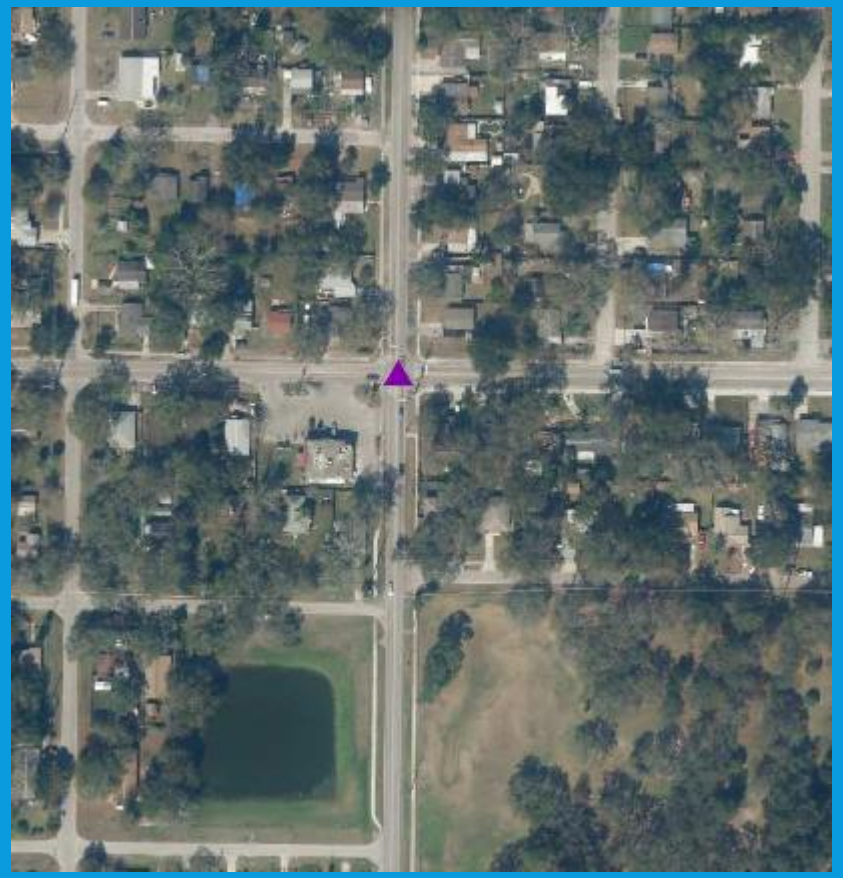
E FLETCHER AVE @ 56TH STREET N.

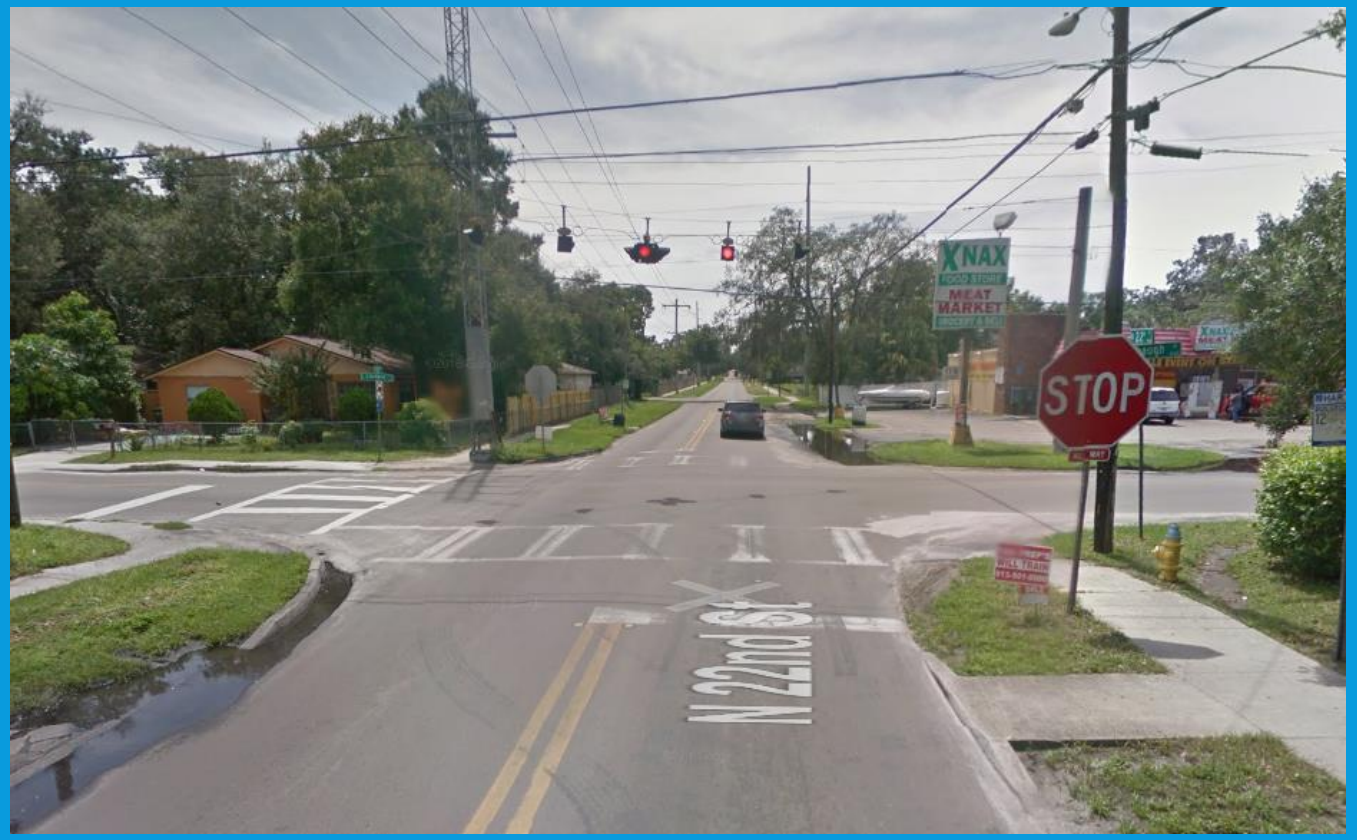




RCI Feat. 322
NavTeq / HERE
Open Street Map
Crash Data

N 22ND ST @ E LINEBAUGH AVE

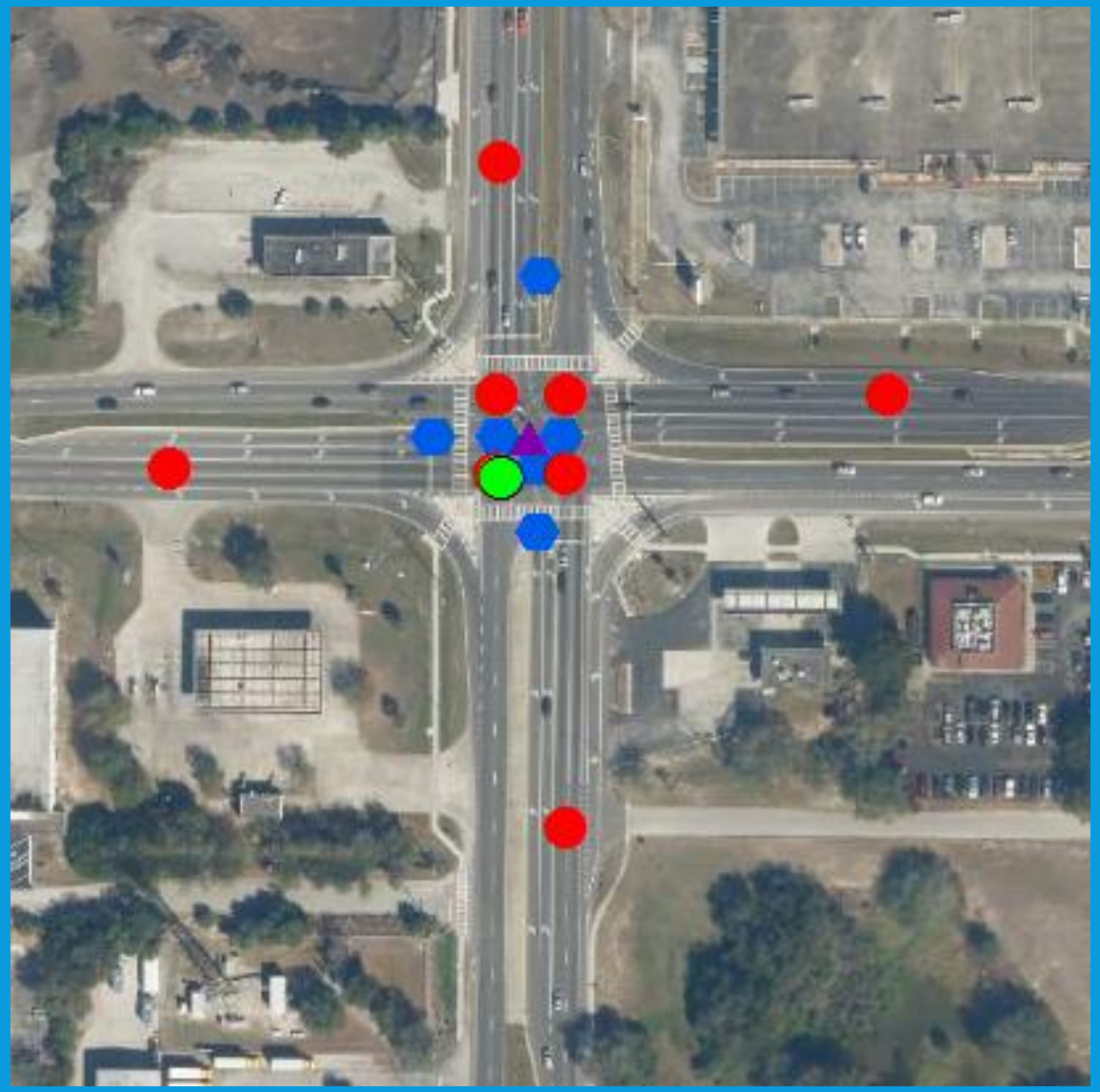




One Open Street Map feature of 'traffic signal'

COUNTY LINE RD @ RUSKIN AVE.

RCI Feat. 322
NavTeq / HERE
Open Street Map
Crash Data



Signals_Confirmed_Integrate_CE

ICOUNT

1.000

2

3-5

6-10

11-16

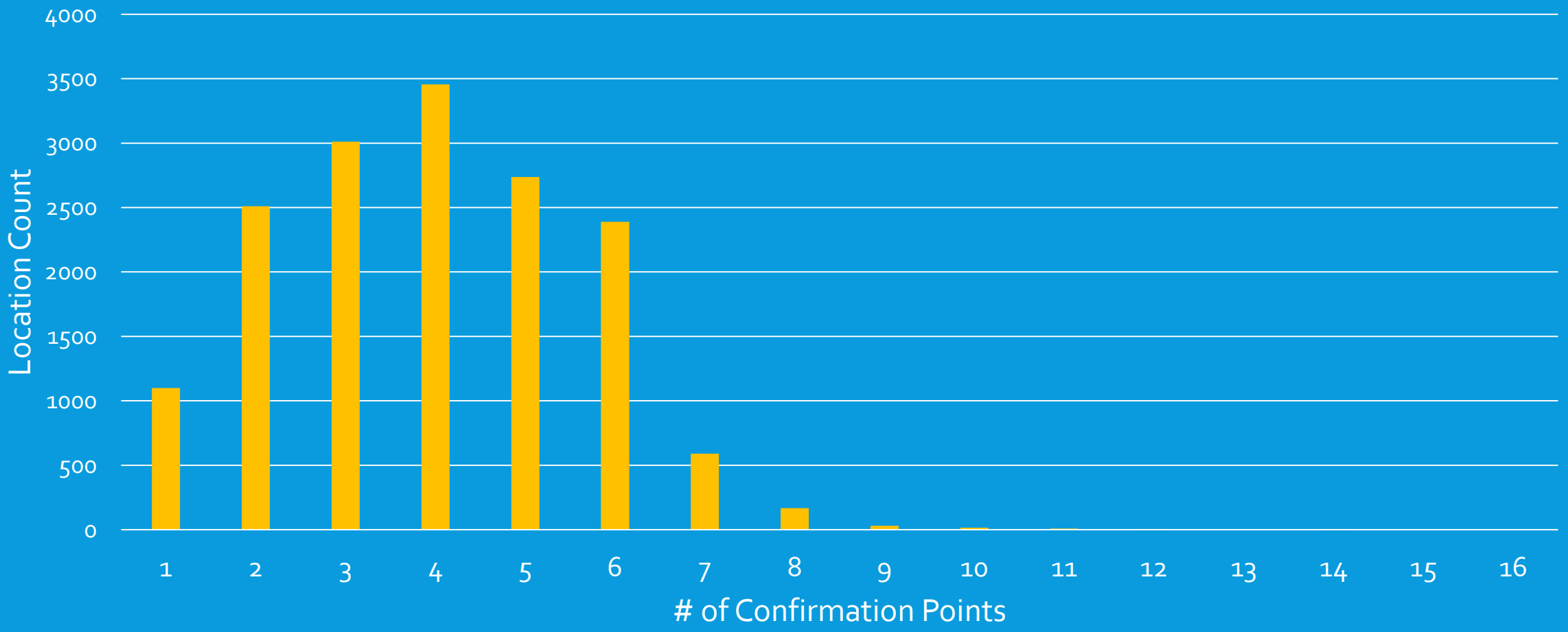
RCI Feat. 322

NavTeq / HERE

Open Street Map

Crash Data

CONFIRMATIONS BY LOCATION COUNT



WHAT QUESTIONS DO YOU HAVE?

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